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ABSTRACT

Based on a study dealing with problem-finding behavior of artists as the first step in the creative process (Getzels and Czikszentmihalyi), this study on the empirical nature of problem-finding included middle school students from a suburban-rural area in Western Pennsylvania. Eight students identified through three measures as creative were matched with eight low creative students using sex, grade, and IQ. Each student wrote one composition in a lab situation. The task was to produce a piece of writing incorporating any or all of 15 displayed objects. The results from three measures at the problem-solution stage and two panels of five judges rating the written product indicate that individuals who had the most original products were both consistently higher on the process variables at both the problem-formulation and problem-solution stages. Two conclusions from the data are suggested: (1) writers and artists who exhibit a concern for problem-discovery at the problem-formulation stage will have the most originally rated products; and (2) during composing, writing or drawing, writers and artists share similarities in problem-discovery cognitive strategies even though the medium differs. (PN)

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# The Relationship between the Originality of Essays and Variables in the Problem-Discovery Process: A Study of Creative and Noncreative Middle School Students

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# THE RELATIONSHIP BETWEEN THE ORIGINALITY OF ESSAYS AND VARIABLES IN THE PROBLEM-DISCOVERY PROCESS: A STUDY OF CREATIVE AND NONCREATIVE MIDDLE SCHOOL STUDENTS

There is an African story called," The Cow Tail Switch" by Harold Courlander found in THE COW TAIL SWITCH AND OTHER WEST AFRICAN TALES about a highly rspected man of the village who had many sons. One day these sons are sitting together and one asks, "Where's Father?" Well, no one has seen Father so they all went searching for him through the village and the surrounding jungle. Well one of the sons found that Father had been attacked and killed by a lion.

The sons were beside themselves with grief when one son said to the effect, "Let us repair Father, I have the gift of making a body," so he repaired Father's body, another son said that he had the gift to heal, so he healed the damaged parts. Another said he could make blood flow in veins, and he started blood through Father's body, the next could repair a heart which he started pumping, another said he could give the breath of life which he did and the last son said he could make Father think and remember which he did.

Father awoke and there was much happiness in the village. Father was very proud of his children and said he would give his most prized possession, a cow tail switch to the son who did the most for him. So he went and brought out the beautiful switch and gave it to the son who had done the most for him.

Now, generally, in my class students will speculate on who received the prized switch and we discuss who did the most for Father.

As it turns out, the son who receives the coveted prize was the son who first asked," Where's Father?" The son who first discovered a problem. The son who first sensed a "gap" in the world around him.

How do people find problems or sense them?

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For instance, how does an artist or any writer decide what to paint or write once the muse strikes, or in the case of students, once the assignment is made? How do writers start? How do artists start? How does solving a writing problem or an art problem differ from solving other types of problems?

In order to solve a writing problem a student must first find the problem. The problem solver must first be a problem finder. Types of problems have been differentiated. A writing problem is not like a math problem or a "presented" problem situation where often the problem is known, the means to solving it is known as well as the solution. In a writing problem the topic must be discovered, processes differ as well as solutions.

Although there is much literature on problem solving, little can be found of an empirical nature on problem-finding. A study that has dealt with problem-finding behavior as the first step in the creative process was conducted by Jacob Getzels and Mihalyi Csikszentmihalyi with art students. The purpose of their research was to determine whether discovery-oriented behavior in a situation involving creative production was related to the assessed creativity of the product.

In this study 31 art students were asked, separately to produce a drawing from twenty-seven objects placed on a table. The students were told to take any or all the figures and arrange them as they wished on an empty table. The students were then told to work on a drawing until they felt it was completed.

Problem-finding behavior was determined at both the problem-formulation and problem-solution stages. Students were scored on such variables as the number of objects handled, uniqueness of the objects chosen, selection and arrangement of the objects, behavior while drawing and how the perspective of the objects changed in the drawing.

Groups of expert and non expert judges then rated the products on originality, craftsmanship and aesthetic value.

The results indicated a strong relationship between problem-finding behavior and the originality of the drawings. The investigators noted that the operationalization of the notion of discovery at the problem formulation stage marked the first empirical evidence of the problem-finding notion. Although this research was done with artists there is reason to assume a similar relationship exists with writers. As with artists, writers must "discover" and "formulate" a problem to be solved in the composition. This discovery-oriented behavior can be hypothesized to have a relationship with a finished written product.

I am telling you so much about the Getzels and Csikszentmihalyi study because I adapted their model in my study with student writers.

My subjects were middle school students from a suburban-rural area in Western Pennsylvania. Eight students identified through three measures as creative were matched with eight low creative students using sex, grade and IQ (only those with an IQ above 125 were included in order to control for any intelligence-creativity interaction).

Each student wrote one composition in a lab situation. As in the study with artists, I used two tables. Fifteen objects were placed on one table. I used objects similar to the ones used in the Getzels study. Objects were chosen to give the greatest possible variety of simple and complex, human and mechanical, abstract and concrete choices. Objects included a small manikin, plastic grapes, a woman's hat, a brass horn, a prism, a microscope, a Bible and a slide rule.

The second table was left empty and used by the students to arrange the objects. Each student came to the setting alone and received the following instructions:

Consider the objects on this table. Choose as many as you wish, arrange them in any way you wish on the other table, handle them as much as you want. Your task is to produce any piece of writing as long as it is pleasinng to you. You may take as long as you wish. You may use any or all of the objects in your writing.

Five measures of problem finding were developed based on the study with artists: The number of objects manipulated or handled by the students, the uniqueness of the objects chosen, exploratory behavior during selection and arrangement, prewriting time or the time from when the instructions were given to when students began writing the composition, total time and a total problem formulation score.

I used three measures at the problem solution stage: Changes in object reality, if for example the brass horn had been used as a weapon in the text. Use of objects to create new order. I also used responses from the post hoc interview question, "Why did you arrange the objects as you did." This measure was evaluated by separating essays into fiction or non fiction categories and then determining if the arrangement of the objects changed the perspective of the essay. The final measure was fluency or a simple word count. Scores from each variable were converted to a total problem-solution score.

Two panels of five judges independently rated the written product. The first panel of judges was chosen from middle school teachers of language arts. The second panel of judges was composed of teachers in disciplines other than language arts. Each judge rated the essays on a 1 (low) to 9 (high) scale on three aspects: originality, craftsmanship, and aesthetic value.

The results indicate that the scores for the group of writers assessed as creative were consistently higher, significantly for the number of objects touched and at the total score of the problem formulation stage. The other scores at the problem formulation stage were higher for the assessed creative group.

At the problem solution stage the object reality score and the fluency score were significantly higher for the creative group.

The results from the first group of judges, the language arts teachers, indicate that the creative group was considered to be significantly better on originality and aesthetic

value, the craftsmanship scores were the same for both groups. The second group of judges, the non-language arts teachers were similar on originality and aesthetic value, but they also rated the creative group significantly higher on craftsmanship as well.

A crucial aspect of the Getzels and Csikszentmihalyi study was the overall relationship between the process and product scores. As in the study with artists, a relationship exists between several process variables, including the total score and the judges' originality ratings. The correlation between the grand total score for the process variables and the originality ratings was .58, very similar to the correlation of .65 (n=31) that Getzels and Csikszentmihalyi reported between the same variables in their study of artists.

The relationship between problem-finding at the problem-formulation stage and problem solution stage and the assessed originality and aesthetic value of the written product was strongly supported by the data. The results indicate that the way a student approaches a writing problem, the problem-formulation stage, does correlate with the originality of the written product. Merely touching objects, manipulating objects, choosing more unique objects and spending more time at the prewriting stage does not cause a student to have an original product. However, creative student writers doing these behaviors may be seeing more relationships between objects. I would like to suggest that an attempt to understand a deeper structure among objects and how they co-occur has an effect on the originality of the written product.

I would like to take a moment and describe the types of essays I received. The noncreative group seemed to take each item in their arrangements and describe the purpose each item had. These students attempted to relate items to their experience. For instance, after describing a microscope students tended to write about what could be sen through a microscope. All but one noncreative wrote nonfiction.

Creative student writers almost all wrote fiction. These included tales of early, Catholic, wine scientists in Rome to a tale of an inventor who invented a way of turning a phonograph through eye power intensified through a microscope. The one creative student who wrote nonfictiion, wrote from the perspective of a blind person analyzing and describing the items she arranged simply by feel and then speculating as to the use of the various objects. One noncreative student wrote fiction, but she neither made an arrangement nor did she use any of the items in the story. During the interview she indicated that she understood the task but couldn't work any items into the story. The story was well written and received almost exclusive high ratings for craftsmanship by both groups of judges. This might give you an idea of the range in content.

These results concur with the correlative research of Getzels and Csikszentmihalyi who found a similar relationship with artists at the problem-formulation stage. The artists and writers who had the most original products were both consistently higher on the process variables at both the problem-formulation and problem-solution stages.

I suggest two conclusions from the data: one, writers and artists who exhibit a concern for problem-discovery at the problem-formulation stage will have the most originally rated products. Two, during composing, writng or drawing, writers and artists share similarities in problem-discovery cognitive strategies even though the medium differs. Remember, these were college artists and middle school writers.

An important aspect of the Getzels and Csikszentmihalyi study was establishing problem-discovery as a behavior that exists prior to problem-solving in discovered rather than presented problem situations. Since this distinction was made in both studies, it is assumed that both problem structures in each study belong within the discovered problem rubric, thus problem discovery behavior in both artists and writers, regardless of age, is highly related to the originality of the finished product whether it be written or drawn.

Both creative writers and artists appear to see more relationships between objects at a deeper structural level than do their less creative peers.

Although my study does indicate that creative students are consistently more original in their writing, the results warrant further investigation, especially by manipulating writing tasks.

If we can assume that the objects used in my study, readily identified by every student, are common to everyones's life experiences, then we might wonder how a person's life experiences, the relationships between these experiences, and a person's approach to integrating these experiences affect or effect problem finding as part of a process that leads to creative production.

A model of problem solving might consider problem-finding, the choosing of a solution from a myriad of possibilities and intrinsically knowing the choice is correct may also be the well spring of the creative act. As a first step in the problem solving process this perhaps preconscious problem discovery behavior must run smoothly or perhaps there can be no creativity.

Writing process literature refers to this as prewriting. But problem-formulation might cover much more than this. Whether it is through the overlaying of many schemata or some extra conscious process, knowing becomes conscious.

Research is needed at the level where relationships begin to emerge from this preconscious activity, what these relationships are like, and how they are used in the problem solving process.

If we may assume that touching, manipulating concrete objects, or otherwise inspecting objects is a manifestation of the way artists and writers analyze feelings and synthesize life experiences then touching and manipulating may provide us a window for studying the unobservable ways students analyze and synthesize.